



Approval # 20100010  
(Renewal for 950045-U)

Environmental & Regulatory Services Division  
Bureau of Petroleum Products and Tanks  
201 West Washington Avenue  
P.O. Box 7837  
Madison, WI 53707-7837

## Wisconsin COMM 10 Material Approval

Equipment: Tracer Tight Nonvolumetric Leak Detection  
Method

Manufacturer: Praxair Services, Inc.  
3755 N Business Center Dr.  
Tucson, Arizona 85705

Expiration of Approval: December 31, 2013

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### **SCOPE OF EVALUATION**

The Tracer Tight non-volumetric leak detection method by Praxair Services, Inc., for leak detection of tanks and connected piping, has been evaluated for use as a method of tank and line precision tightness testing complying with **ss. COMM 10.130 and 10.515 (4)** of the current edition of the Wisconsin Flammable and Combustible Liquids Code.

This evaluation summary is condensed to provide the specific installation, application, and operational parameters necessary to maintain the subject systems in compliance with the Wisconsin Administrative Code – Comm 10.

## **DESCRIPTION AND USE**

Tracer Tight leak testing is performed by mixing a volatile chemical concentrate, called a tracer, with the product inside of a tank. The initial concentration of tracer is at least  $3.4 \times 10^4$  times the minimum detectable level for that tracer. If the product leaks out, the tracer escapes from the liquid product by evaporation. The tracer vapors are released into the soil and migrate in all directions from the leak through the soil porosity. Special probes or tubing are placed in the soil near the tanks and pipes to collect the tracer vapors that will appear in the soil gas in the event of a leak. The vapors are collected from the soil and analyzed for the presence of tracer by means of an extremely sensitive chromatographic measurement. The tracer is added to the product in very low concentrations, typically only 10 ppm. The tracer vapors can be detected in the low parts per trillion level in the soil gas.

The tracer chemical, being highly volatile, distributes itself into both the fuel and vapor space above the fuel inside the tank. Because of its ability to escape through leaks in the vapor space of a partially full tank, there is no requirement to top-off tanks with fuel at the start of the testing. Several different tracers may be used to test different portions of the system to aid in determining which portion of the system is responsible for a release.

Presence of the tracer in the soil around the tank system is detected by the analysis of soil gas samples collected from probes. Probes shall be placed in a configuration such that any portion of the tank system is within a horizontal distance of 10 feet from the nearest probe. Holes may need to be bored through concrete or asphalt.

For ethanol free products, if the ground water level produces a higher hydrostatic head than the product level, a breach in the tank will be indicated by water ingress. The method includes procedures that will detect a leak in a tank that contains a product that is not miscible with water and has a specific gravity of less than 1.0 by measuring water ingress using water-sensitive paste and a ruler with graduations in millimeters or sixteenths of an inch. Manufacturer requirements for minimum initial water levels and minimum test times must be observed. In tanks that store products that are heavier than water or are miscible with water, product level must be higher than the groundwater level as detailed in the Limitations/Conditions of Approval section of this approval.

## **TESTS AND RESULTS**

The performance of the Tracer Tight was determined in accordance with the EPA protocol for nonvolumetric tank testing methods. The system is capable of detecting a 0.1 gallon per hour leak at a probability of detection (PD) of 100 percent and a probability of false alarm (PFA) of 0 percent. The system is capable of detecting a 0.005 gallon per hour leak at a probability of detection (PD) of 97 percent and a probability of false alarm (PFA) of 2.9 percent.

The EPA test procedure only addressed the issue of the method's ability to detect leaks, not for safety hazards.

### **LIMITATIONS / CONDITIONS OF APPROVAL**

- Tracer Tight tank test system is approved for use on tank systems (tanks and/or pipe lines) of any size, and for multi-tank/multi-line systems.
- The procedure specified by Praxair Services, Inc., shall be used to conduct all tests. The product may be at any level within the tank. The Tracer Tight method is not affected by the temperature of the product in the tank system.
- The dosage of tracer is based on tank size, product volume in tank, and frequency and volume of tank refills according to site operating characteristics.
- Placement of the monitoring wells and probe shall be determined by testing personnel in accordance with Praxair Services recommendations.
- **The Tracer Tight method shall not be used if the intrinsic permeability of the soil is less than 1 darcy (soil must be permeable enough to yield 0.15 cfm of air through 3/4-inch nominal diameter probe under a maximum vacuum of 15 inches of Hg).**
- **A minimum depth of 18 inches of unsaturated soil is required to allow migration of the tracer compound.**
- **Soil cannot be frozen when using the Tracer Tight method.**
- **The minimum waiting period between adding the tracer chemical and data collection is 7 days; the maximum waiting period shall be determined by testing personnel.**
- **A detection of tracer greater than  $3 \times 10^{-5}$  times the initial concentration inside the tank system indicates that a leak exists.**
- **For sites with gasoline products containing any percentage of ethanol (E10, E15, E85, E100), and groundwater levels that are above the bottom of the tank, the hydrostatic pressure of the product in the tank, as determined by product level, shall exceed the hydrostatic pressure of the groundwater during the test period. To accomplish this, the product level must be maintained at least 12 inches above groundwater level for a minimum of 17 hours during the first three days following addition of tracer to the tank.**

This approval will be valid through December 31, 2013, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Material Approval Number must be provided when plans that include this product are submitted for review.

**DISCLAIMER**

The Department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement unless specified in this document.

Effective Date: January 1, 2011

Reviewed by: Signature on File  
Greg Bareta, P. E.  
Engineering Consultant  
Bureau of Petroleum Products and Tanks

Approved by: Signature on File Date: \_\_\_\_\_